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ABSTRACT

INTRODUCTION: Studies worldwide point to increased risk of mental health problems in immigrants. However, the data on Canadian immigrants' mental health is ambiguous. To address this, we examined the relationship between self-perceived mental health and reported diagnosis of mood disorders with age, gender, migration status, time since migration, and social determinants of health factors.

METHODS: We analyzed three cycles of the Canadian Health Measures Survey. Our outcome variable included self-perceived mental health and reported diagnosis of mood disorders. We used weighted logistic regression to model time since migration conditional on age, gender, income, community belonging, education, employment status for 12,160 participants aged 15 to 79 years.

RESULTS: Recent migrants (within 5 years) reported better self-perceived mental health (odds ratio 3.89, 95% CI 1.9, 8.45) but this effect disappeared with longer duration. Other predictors were older age, higher income, better sense of community belonging, and being employed. Similarly, diagnosis of mood disorders was less likely to be reported in recent migrants (odds ratio 0.23, 95% CI 0.10, 0.53) with some weak evidence that this was also seen amongst longer term migrant resident (> 10 years). Diagnosis was also associated with older age, being a woman, less income, weak sense of community belonging and being unemployed.

DISCUSSION: Our findings indicate that migrants to Canada do not have worse mental health in general though health and social policies need to attend to the socioeconomic determinants, such as low income, unemployment, and a poor sense of community belonging, which contribute to population health outcomes.

Keywords: Canada; Immigrants; Immigration; Mental Health; Social Determinants of Health

INTRODUCTION

A large number of immigrants arrive in Canada each year. In 2011, over 6.8 million individuals in Canada were born outside of the country.[1] In 2014, Canada welcomed 260,404 permanent residents.[2] This large influx of populations has a significant impact on health burden and care in Canada. Cumulative evidence suggests that immigrants, referred to as migrants[1] hereafter, arrive in Canada healthier than Canadian-born residents, a phenomenon termed as the "healthy migrant effect."[3] This extends beyond physical health indicators to encompass the mental health of immigrants in destination countries.[4] However, evidence suggests that migrants' health deteriorates after some time in host societies [5].

Diverse social determinants of health are implicated in migrant mental health disparities in Canada. Income,[6] gender,[7, 8, 9, 10] employment status,[11] social support network, and a sense of community belonging,[12, 13] have all been shown to contribute to mental health status. Although there is evidence of an effect of age at migration on health,[14] there is a paucity of knowledge about mental health outcomes of migrant populations in Canada across the lifespan and across gender.

Studies worldwide point to increased risk of mental health problems and illnesses in migrant groups.[4, 15] A meta-analysis of 21 studies from across the globe found that migrants experience higher rates of mental health problems than non-migrants.[15] However, data on the mental health of migrant populations in Canada are equivocal. Findings from the Canadian Community Health Survey (CCHS) point to lower rates of psychiatric disorders, including unipolar and bipolar disorders, among first-generation migrants compared to Canadian-born residents.[16, 17, 18, 19] However,

[1] By immigrant or migrants, we mean individuals who are permanent residents or citizens of Canada but who were not born in Canada. This includes economic migrants, family class migrants, and refugees who are current permanent residents.

results from regional studies do not always concur with those from the CCHS.[20, 21] For example, some studies in specific Canadian cities report greater incidence rates of mental health disorders among migrant populations.[20, 22] The contradictory and equivocal findings of studies concerned with migrants' mental health makes it relevant to analyze a broader range of available national data.

The purpose of this study is to quantify the burden of perceived mental health problems among migrant and non-migrant populations in Canada and to identify social factors associated with mental health. In this study, we analyzed data from the Canadian Health Measures Survey (CHMS) and examined the relationship between self-perceived mental health and self-reported diagnosis of mood disorders with migration status, time since migration conditional on age, gender and social determinants of health factors (income, community belonging, education, employment status).

METHODS

We analyzed data from the Canadian Health Measures Survey (CHMS), a national cross sectional survey that includes personal interviews and physical measurements in a clustered random sample of Canadian residents. The CHMS is approved by the Health Canada Research Ethics Board. The survey has collected three cycles of data. Data collection for cycle 1 occurred from 2007 to 2009; cycle 2 from 2009 to 2011; and cycle 3 from 2012 to 2013. Each cycle conducted a one-time cross-sectional survey. All three cycles were included in our analyses for a total sample size of approximately 17,800 individuals. Of these, approximately 3,400 people were born outside of Canada and around 14,400 were Canadian born.

The CHMS includes individuals 3 to 79 years of age, living in Canada's ten provinces. Complete data on risk factors and outcomes of interest in our study are available for individuals ≥ 15 years of age. The CHMS uses a multistage sampling design with two sampling frames to select its

sample. The probability of an individual being selected for the survey is determined as the product of the probability of selection at each stage. To correct for non-response, the weights of non-respondent households and individuals are redistributed to respondents within homogeneous response groups based on characteristics that are available for both participants and non-participants, as determined from the Census of Canada.

Outcomes

We used two outcome measures (a) self-perceived mental health and (b) self-reported diagnosis of mood disorder. To assess self-perceived mental health status individuals were asked, “In general, would you say your mental health is excellent, very good, good, fair, or poor?” In our analysis, we have grouped individuals with “excellent,” “very good,” or “good” health and compared them to those with “fair” or “poor” health (binary variable). To ascertain a history of mood disorders, participants were asked, “Do you have a mood disorder such as depression, bipolar disorder, mania, or dysthymia?” We compared those reporting a mood disorder with those without a mood disorder.

Covariates

Age was categorized into 5 categories: 15–19, 20–34, 35–44, 45–64, and 65–80 years. Employment was assessed by asking whether the person worked at job or business in the past 12 months, which yielded 3 categories: “Yes,” “No,” and “Not available for people 65 years old and older.” Sense of community belonging was assessed by the question, “How would you describe your sense of belonging to your local community?” Sense of community belonging had 4 possible categories: “very strong,” “somewhat strong,” “somewhat weak,” and “very weak.” Immigration status was assessed by the country of birth: Canada or other. Time since immigration was categorized, a priori, as Canadian, 0–5 years, 6–10 years, and more than 10 years. Education was assessed by the highest

level of education of the household. It had 3 categories: "Less than secondary school graduation," "Secondary school graduation or some post-secondary," and "Post-secondary graduation."

Statistical methods

Weighted logistic regression was used to estimate the odds ratios and 95% confidence intervals for migration status, time since immigration, age group, gender, income, sense of community belonging, education, employment on self-perceived mental health and self-reported diagnosis of mood disorders. Based on the Box and Tidwell procedure,[23] income was found to be linearly related to the logit of both dependent variables, so was used as a continuous variable but rescaled so that odds ratios reflect a change per $10,000 increase in income. Because of the collinearity between immigration status and time since migration, we used the latter variable as it is more informative in our models but report the former for completeness. Bootstrap weights provided by Statistics Canada were included in the analysis to accommodate for the survey design and non-response bias and to ensure that the findings are representative of the Canadian population. All analyses were conducted using SAS 9.4.

RESULTS

In total, we analyzed data from 12,160 participants. Of these, 9,310 (76.6%) were Canadians whilst 2,850 (23.4%) were migrants (See Table 1). Migrants were older, had lower income, but had higher level of education and reported a similar sense of community belonging than the Canadian group.

Self-perceived mental health

Overall, there was no statistically significant difference in the mental health of immigrants versus non-immigrants in Canada (Odds Ratio 1.07, 95% CI 0.87, 1.31) adjusting for age group, gender, income, sense of belonging, education and employment. When we used time since migration, a more

complex picture emerged. Recent migrants were almost three times more likely to report better mental health (Odds ratio 3.98, 95% CI 2.06, 7.70) but this effect had fully attenuated with longer duration of residence. Other predictors of better mental health included older age, higher income, better sense of community belonging, being employed, (see table 2). There was little evidence that gender and education were predictive but there was a suggestive trend (p=0.06) that higher education was associated better mental health and individuals with secondary school graduation were less likely to report excellent, very good, and good self-perceived mental health than people with post-secondary graduation (Odds Ratio 0.67, 95% CI 0.46-0.97).

Self-reported diagnosis of mood disorders

Migrants were less likely to report diagnosis of mood disorders (Odds ratio 0.80, 95% CI 0.69, 0.94, p=0.005). When we examined this by duration of residence in Canada, the pattern was non-linear so that the lowest risk was seen in the immediate five years followed by little difference between 6-10 years and then a less reduced risk after 10 years of residence. Increased diagnosis was associated with middle age (inverted U-shape with age), female gender, lower income, weak sense of community belonging and unemployment (see table 3). Education was not a predictor in the model conditional on the other covariates.

DISCUSSION

The secondary data analyses of the CHMS identified that migration status per se was not associated with self-reported well-being but was associated with a reduced odds of being diagnosed with a mood disorder as compared to Canadians conditional on other socio-demographic factors. This observation is consistent with data from the CCHS, which shows lower risk of mental illness among migrants.[16, 17, 18, 19] However, it is inconsistent with international data on migrants' mental health,

which shows higher risk among migrants, though these results may not be generalizable to Canada per se.[4, 15]

Our analyses revealed that participants who had recently migrated to Canada within 5 years had better mental health scores than those who migrated to Canada more than 10 years ago. Prior studies have shown that within about 10 years of living in Canada, migrant health deteriorates and converges to Canadian-born levels of mental health.[24, 25, 26] Indeed, using the CCHS database, Ali reported that the healthy migrant mental health effect was lost overtime and the mental health of long-term migrants (10+ years in Canada) did not significantly differ from the non-migrant population.[16] This pattern of better mental health in recent migrants was consistent with our observation of a 67% relative reduction in the odds ratio for self-reported diagnosis. We cannot differentiate whether this duration effect is secondary to migrant acculturation with the host's environment or reflects a cohort effect in which more recent migrant groups are more selected for better mental health than past cohorts. In addition to acculturation with host environment and cohort effect, other possible explanations include regression to the mean, better access and use of mental health services (thus resulting in more diagnosis of mental illness) and increased medicalization of immigrants lived experiences like mainstream Canadians.

Overall, our analyses demonstrated that sociodemographic factors were also associated with both self-perceived mental health and self-reported diagnosis of mood disorders. Individuals aged 65 to 80 years reported better mental health than younger individuals. The Mental Health Commission of Canada also proposed that age has an effect on diagnosis of mental illness within the general Canadian population.[27] Estimated 12-month prevalence rate of mental illness in Canadians age 13 to 29 is 30%, while the prevalence rate in individuals age 60 to 69 is far lower at 10%.

Economic hardship is also a significant determinant of health and linked to health disparities. One of the most significant factors contributing to mental health in our analysis is unemployment

and lower household income. Migrants face many barriers in accessing employment in Canada, such as the lack of acceptance of their foreign credentials by professional bodies and employers, language-related barriers, and lack of prior Canadian work experience.[28, 25] The inability to secure suitable work forces many migrants to take up low-skilled, precarious work to survive. We noted a difference in trends between educational level (higher in migrants) and income (lower in migrants) suggesting inequitable access to higher paid jobs (See Table 1). The importance of financial resources for psychological and physical well-being of migrant groups has been identified by a number of studies.[24, 28] Thus, programs and services that contribute to improving employment outcomes for migrants and income status may serve to improve migrant mental health and ultimately population health in Canada.

Sense of community belonging was strongly, directly associated with self-perceived mental health and self-reported diagnosis of mood disorders. The odds of having excellent, very good, or good self-perceived mental health are around 4 times relatively higher for those who have a strong sense of community belonging than the odds for people with very weak sense of community belonging. This may reflect a protective effect of social cohesiveness but one must also consider the possibility of "reverse causation" so that participants with low mood report their experience of community belonging in more negative terms. Previous research studies have similarly found that individuals with low social support and community belonging have higher odds of reporting mental disorders, and the association was strongest among recent migrants.[12, 13] The relationship between social support and mental health may be explained by the fact that strong social support and community belonging provides people with positive experiences, and a lack of positive social relationships and low social support appeared to have more pronounced adverse effects on the mental health of migrant population.[29, 12] Migrants experience multiple stressors during the settlement

process. A strong social support network may help migrants improve their ability to overcome settlement challenges.[12, 13]

Gender showed discordant results with our outcomes. While we found no relationship between gender and self-perceived mental health, our analysis demonstrated that women are more likely than men to report a diagnosis of mood disorder. Several studies report that women (including migrant women) experience more non-psychotic mental health disorders (e.g., depression) and are more likely to use mental health services than men. [29, 6, 8, 10] Migrant women's mental health can be influenced by a range of factors. For instance, in most societies, women are assigned subordinate positions to men and experience systematic discrimination in access to power and resources and this may be worse for migrant women.

These analyses have a number of important limitations. A major limitation of this study is our limited sample size. This resulted in us not being able to undertake an intragroup analysis of migrants in Canada and we recognize the weakness of combining what are heterogeneous groups into one category. In addition, we were not powered to test for important interactions such as time since migration and gender. Future studies could further examine differences in mental health status across diverse migrant and other sub-groups. Secondly, the question about diagnosis of mood disorders may be problematic. Within this question: "Do you have a mood disorder such as depression, bipolar disorder, mania, or dysthymia", immigrants and non-immigrants may not fully understand what dysthymia, bipolar or mania means. Further research should utilize clinical assessment of mental illness rather than self-report on diagnosis of mood disorders. Third, the reported associations are cross-sectional rather than longitudinal. This limits the ability to determine causality, as in our finding about community belonging. Our analyses suggest a waning off effect of positive mental health in recent migrants. However, acculturation and cohort effect are plausible explanations. Thus, this findings needs to be confirmed in longitudinal studies with repeat outcome

measures. There is also a need for further qualitative research evidence to provide a deeper understanding of the roles of community belonging and income on migrant mental health. This will help to develop social, immigration, and health policies that can contribute to migrants' mental health.

Comparative studies across major destination countries on the influence of policies and diverse determinants of health may help shed light on viable immigration and health policy approaches to address the mental health of migrants. Given evidence that migrants' mental health diminishes after a period of time in Canada, an upstream approach is needed to tackle the diverse influences of multiple determinants of health throughout the migration and settlement process. Moreover, our results indicate that mental health service provision for migrants should not just be limited to the initial years in Canada as the experience of longer term migrants may be more problematic and require mental health interventions to maintain and improve their mental health.

REFERENCES

1. Statistics Canada. Immigration and ethnocultural diversity in Canada. Ottawa: Statistics Canada, 2013. Available at: http://www12.statcan.gc.ca/nhs-enm/2011/as-sa/99-010-x/99- 010-x2011001-eng.pdf (Accessed July 15, 2016).

2. Citizenship and Immigration Canada. Canada facts and figures: immigrant overview –permanent residents 2014. Ottawa: Citizenship and Immigration Canada, 2015.

3. Kennedy S, Kidd MP, McDonald JT, Biddle N. The healthy immigrant effect: patterns and evidence from four countries. *J Int Migr Integr* 2015;16(2):317–22.

4. Abebe DS, Lien L, Hjelde KH. What we know and don't know about mental health problems among immigrants in Norway. *J Immigr Minor Health* 2014;16(1): 60–7.

5. De Maio FG, Kemp E. The deterioration of health status among immigrants to Canada. *Glob Public Health* 2010: 5(5), 462-78.

6. Clarke, DE, Colantonio A, Rhodes AE, Escobar M. Pathways to suicidality across ethnic groups in Canadian adults: The possible role of social stress. *Psychological Medicine* 2008: 38:419-31

7. Hollander A, Bruce D, Burström B, Ekblad S. Gender-related mental health differences between refugees and non-refugee immigrants: a cross-sectional register-based study. *BMC Public Health* 2011;11(180): 1-8.

8. Kwak K, Rudmin F. Adolescent health and adaptation in Canada: examination of gender and age aspects of the healthy immigrant effect. *Int J Equity Health* 2014;13(1):103. doi:10.1186/s12939-014-0103-5.

9. Pahwa P, Karunanayake P, McCrosky J, Thorpe, L. Longitudinal trends in mental health among ethnic groups in Canada. *Chronic Dis Inj Can* 2012;32(3):164–76.

238 10. Piccinelli M, Wilkinson G. Gender differences in depression: *British Journal of Psychiatry* 2000;
239 177(6): 486-492.
240 11. Rodriguez E, Frongillo EA, Chandra P. Do social programmes contribute to mental well-being?
241 The long-term impact of unemployment on depression in the United States. *International Journal of*
242 *Epidemiology* 2001; 30:163-70.
243 12. Chadwick, KA, Collins, PA. Examining the relationship between social support availability,
244 urban center size, and self-perceived mental health of recent immigrants to Canada: a mixed-methods
245 analysis. *Soc Sci Med* 2015;128:220–30. doi: 10.1016/j.socscimed.2015.01.036.
246 13. Puyat, JH. Is the influence of social support on mental health the same for immigrants and non-
247 immigrants? *J Immigr Minor Health* 2013;15(3):598–605.
248 14. Gee EM, Kobayashi KM, Prus SG. Examining the healthy immigrant effect in mid- to later life:
249 findings from the Canadian Community Health Survey. *Can J Aging* 2004;23 Suppl 1:S61–9.
250 15. Bourque FI, van der Ven E, Malla A. (2011). A meta-analysis of the risk for psychotic disorders
251 among first- and second-generation immigrants. *Psychol Med* 2011;41(5): 897–910. doi:
252 0.1017/S0033291710001406.
253 16. Ali J. Mental health of Canada's immigrants. *Health Rep* 2002;13:101–7.
254 17. Menezes NM, Georgiades K, Boyle MH. The influence of immigrant status and concentration on
255 psychiatric disorder in Canada: a multi-level analysis. *Psychol Med* 2011;41(10):2221–31.
256 doi:10.1017/S0033291711000213.
257 18. Schaffer A, Cairney J, Cheung A, Veldhuizen S, Kurdyak P, Levitt A. Differences in prevalence
258 and treatment of bipolar disorder among immigrants: results from an epidemiologic survey. *Can J*
259 *Psychiatry* 2009;54(11):734–42.

19. Stafford M, Newbold BK, Ross NA. Psychological distress among immigrants and visible minorities in Canada: a contextual analysis. *Int J Soc Psychiatry* 2011;57(4);428–41. doi:10.1177/0020764010365407.

20. Kisely S, Terashima M, Langille, D. A population-based analysis of the health experience of African Nova Scotians. *Can Med Assoc J* 2008;179:653–8.

21. Tousignant M, Habimana E, Biron C, Malo C, Sidoli-Leblanc E, Bendris N. The Quebec adolescent refugee project: psychopathology and family variables in a sample from 35 nations. *J Am Acad. Child Adolesc Pschyciatry* 1999: 38(11); 1426-1432.

22. Mechakra-Tahiri S, Zunzunequi MV, Seguin L. Self-rated health and postnatal depressive symptoms among immigrant mothers in Quebec. *Women & Health* 2007;45(4):1–17.

23. Box GEP, Tidwell PW. Transformation of the independent variables. *Technometrics* 1962;4;531–50.

24. Islam F. Examining the "Healthy Immigrant Effect" for mental health in Canada. *University of Toronto Medical Journal* 2013;90(4):169–75.

25. Ng E, Omariba WR. Is there a healthy immigrant effect in mental health? evidences from population-based health surveys in Canada. In: *Canadian Issues Summer 2010: Immigrant Mental Health*. Montreal: Association for Canadian Studies, 2010.

26. Vang Z, Sigouin J, Flenon A, Gagnon A. (2015). The healthy immigrant effect in Canada: a systematic review. Population Change and Life course Strategic Knowledge Cluster Discussion Paper Series 2015;3(1). Available at: http://ir.lib.uwo.ca/pclc/vol3/iss1/4 (Accessed October 10, 2016).

27. Mental Health Commission of Canada. (2013). Making the case for investing in mental health in Canada, 2013. Available at:

http://www.mentalhealthcommission.ca/English/system/files/private/document/Investing_in_Mental_Health_FINAL_Version_ENG.pdf (Accessed July 11, 2016).

28. Robert AM, Gilkinson T. Mental health and well-being of recent immigrants in Canada: evidence from the Longitudinal Survey of Immigrants to Canada (LSIC). Research and Evaluation Branch, Citizenship and Immigration Canada, 2012. Available at: http://www.cic.gc.ca/english/resources/research/mental-health.asp (Accessed October 12, 2016).

29. Delara M. Social determinants of immigrant women's mental health. *Adv Public Health* 2016. doi:ttp://dx.doi.org/10.1155/2016/9730162.

TABLES

Table 1: Canadian Health Measures Survey (Cycle 1, 2, 3): Basic Descriptive for Sample Stratified by Immigrant Status

Variable	Total N= 12,160	Canadians N= 9,310	Immigrants N= 2,850
Age (mean, SE)	43.6 (0.10)	42.8 (0.19)	45.7 (0.49)
15-19 years (%)	7.84%	9.28%	3.87%
20-34 years (%)	25.64%	26.50%	23.26%
35-44 years (%)	17.64%	16.19%	21.62%
45-64 years (%)	36.39%	36.21%	36.88%
65-80 years (%)	12.50%	11.82%	14.37%
Men (%)	49.50%	49.42%	49.72%
Income ($)(mean, SE)	79,841 (2,030)	82,763 (2,150)	71,890 (2,990)
Sense of community belonging			
Very strong (%)	18.83%	18.46%	19.86%
Somewhat strong (%)	44.24%	44.10%	44.62%
Somewhat weak (%)	27.43%	27.87%	26.21%
Very weak (%)	9.49%	9.56%	9.31%
Education			
Less than secondary school graduation (%)	5.91%	6.31%	4.80%
Secondary school or some post-secondary (%)	17.09%	18.51%	13.13%
Post-secondary school graduation (%)	77.00%	75.18%	82.08%

Notes:

1. Standard error is used instead of the SD since SD is very large because of the very large adjusted sample size and adjusted frequencies
2. Only percentages are given for categorical variables since adjusted frequencies are very large. It is possible to multiply these percentages and sample sizes to obtain the adjusted frequencies for the sample.

TABLE 2: CANADIAN HEALTH MEASURES SURVEY (CYCLE 1, 2, 3): PREDICTORS OF SELF-PERCEIVED BETTER MENTAL HEALTH

Variable		***Odds Ratio****	***95% Confidence Interval for Odds Ratio***	***p-value***
Age				< 0.0001
	15–19 vs. 65–80	0.45	(0.25, 0.80)	
	20–34 vs. 65–80	0.46	(0.28, 0.73)	
	35–44 vs. 65–80	0.42	(0.27, 0.65)	
	45–64 vs. 65–80	0.40	(0.29, 0.56)	
Gender	Male vs. female	0.91	(0.67, 1.22)	0.52
Income	(rescaled per $10,000)	1.16	(1.11, 1.22)	< 0.0001
Sense of Community Belonging				< 0.0001
	Very strong vs. Very weak	3.91	(2.42, 6.32)	
	Somewhat strong vs. Very weak	4.89	(3.20, 7.48)	
	Somewhat weak vs. Very weak	2.42	(1.60, 3.67)	
Education				0.06
	Less than secondary school graduation vs. Post-secondary graduation	0.76	(0.50, 1.15)	
	Secondary school graduation vs. Post-secondary graduation	0.67	(0.46, 0.97)	
Employment				0.0006
	Unemployed vs. Employed	0.51	(0.34, 0.75)	
Time since Immigration				0.0006
	Canadians vs. migrants 0–5 years	3.98	(2.06, 7.70)	
	Canadians vs. 6-10 years	0.66	(0.25, 1.78)	
	Canadians vs. > 10 years	1.01	(0.58, 1.74)	

***** *Weighted multivariable logistic regression models used to calculate odds ratios, 95% CI and p-values.*

309 **TABLE 3: CANADIAN HEALTH MEASURES SURVEY (CYCLE 1, 2, 3): PREDICTORS**

310 **OF SELF-REPORTED DIAGNOSIS OF MOOD DISORDERS**

311

Variable		***Odds Ratio****	***95% Confidence Interval for Odds Ratio***	***p-value***
Age				< 0.0001
	15–19 vs. 65–80	1.08	(0.72, 1.63)	
	20–34 vs. 65–80	1.68	(1.02, 2.78)	
	35–44 vs. 65–80	2.47	(1.80, 3.39)	
	45–64 vs. 65–80	2.31	(1.74, 3.07)	
Gender	Male vs. female	0.58	(0.46, 0.73)	< 0.0001
Income	(rescaled by 1/10,000)	0.94	(0.91, 0.97)	0.0002
Sense of Community Belonging				< 0.0001
	Very strong vs. Very weak	0.36	(0.24, 0.53)	
	Somewhat strong vs. Very weak	0.44	(0.31, 0.61)	
	Somewhat weak vs. Very weak	0.54	(0.38, 0.75)	
Employment				<0.0001
	Unemployed vs. Employed	1.85	(1.39, 2.48)	
	Employed vs. Senior non-employed	0.29	(0.16, 0.52)	
Time since Immigration				0.001
	Canadians vs. migrants 0–5 years	0.23	(0.10, 0.53)	
	Canadians vs. 6-10 years	1.05	(0.37, 3.01)	
	Canadians vs. > 10 years	0.66	(0.46, 0.94)	
Education				0.19
	Less than secondary school graduation vs. Post-secondary graduation	1.33	(0.94, 1.90)	
	Secondary school graduation vs. Post-secondary graduation	0.97	(0.71, 1.30)	

312 ***** *Multivariable logistic regression models used to calculate odds ratios, 95% CI and p-values.*